AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-17. (cancelled)

18. (new) An immunoglobulin or a fragment thereof, that specifically binds an antigen of interest, wherein said immunoglobulin or said fragment thereof comprises a variable region of a heavy polypeptide chain said variable region being devoid of normal light chain interaction sites.

19. (new) An immunoglobulin or a fragment thereof, that specifically binds an antigen of interest, wherein said immunoglobulin or said fragment thereof comprises at least part of the variable region of a heavy polypeptide chain said variable region being devoid of normal light chain interaction sites and wherein the immunoglobulin is a heavy-chain immunoglobulin.

20. (new) A fragment of an immunoglobulin according to claim 18, which is the variable region of the heavy chain of said immunoglobulin.

21. (new) A fragment of an immunoglobulin according to claim 19, which is the variable region of the heavy chain of said immunoglobulin.

22. (new) An immunoglobulin or a fragment thereof according to claim 19, which has a constant region which is devoid of CH1 domain.

23. (new) A fragment of an immunoglobulin according to claim 18 which is combined with a fragment of a four-chain immunoglobulin.

24. (new) A fragment of an immunoglobulin according to claim 19, which is combined with a fragment of a four-chain immunoglobulin.

25. (new) A fragment of an immunoglobulin according to claim 18, which is expressed in a prokaryotic or in a eukaryotic host cell.

26. (new) A fragment of an immunoglobulin according to claim 19, which is expressed in a prokaryotic or in a eukaryotic host cell.

27. (new) A fragment of an immunoglobulin according to claim 21, which is expressed in a prokaryotic or in a eukaryotic host cell.

28. (new) A fragment of an immunoglobulin according to claim 19, which comprises at least 10 amino acid residues of the variable region of a heavy polypeptide chain and comprises the residue corresponding to position 45 in the immunoglobulin said residue at position 45 being a charged amino acid residue or a cysteine residue.

29. (new) A fragment of an immunoglobulin according to claim 28, which is combined with a fragment of a four-chain immunoglobulin.

30. (new) A modified 4-chain immunoglobulin or a fragment thereof comprising a variable VH region which is modified such that the VH region has been partially replaced by specific sequences or amino acid residues of an immunoglobulin according to claim 19.

31. (new) The immunoglobulin or a fragment thereof according to claim 18 or 19, wherein the immunoglobulin or fragment is suitable for use in *in vitro* diagnosis.

32. (new) The immunoglobulin or a fragment thereof according to claim 18 or 19, wherein the immunoglobulin or fragment is suitable for use in *in vivo* diagnosis.

33. (new) The immunoglobulin or a fragment thereof according to claim 18 or 19, which is labelled with a detectable label.

34. (new) The immunoglobulin or a fragment thereof according to claim 33, wherein the detectable label is an imaging agent.

35. (new) The immunoglobulin or a fragment thereof according to claim 33, wherein the detectable label is selected from the group consisting of a radio isotope, a chemical marker, an enzymatic marker, or a chemiluminescent marker.

36. (new) An immunoglobulin or a fragment thereof according to claim 18 or 19, which is directed against an immunoglobulin idiotype.

37. (new) A method for detecting the presence of a bacterium, virus, or parasite in a biological sample, comprising the steps of:

(a) contacting the biological sample with the immunoglobulin according to claim 18 or 19 that specifically binds said bacterium, virus, or parasite; and

(b) detecting binding of the immunoglobulin or fragment.

38. (new) The method according to claim 37, wherein the virus is HIV or hepatitis B virus.

39. (new) A method for detecting the presence of a tumor in a biological sample, comprising the steps of:

(a) contacting the biological sample with the immunoglobulin according to claim 18 or 19 that specifically binds a protein present on said tumor; and

(b) detecting binding of the immunoglobulin or fragment.

40. (new) A method for detecting the presence of myeloma in a biological sample, comprising the steps of:

(a) contacting the biological sample with the immunoglobulin according to claim 18 or 19 that specifically binds a myeloma immunoglobulin epitope; and

(b) detecting binding of the immunoglobulin or fragment.

41. (new) A method for detecting a biological molecule in a biological sample, comprising the steps of:

(a) contacting the biological sample with the immunoglobulin according to claim 18 or 19 that specifically binds said biological molecule; and

(b) detecting binding of the immunoglobulin or fragment.

42. (new) The method according to claim 41, wherein said biological molecule is a protein, viral envelope glycoprotein, hapten, carbohydrate, nucleic acid, cellulare receptor, or a membrane protein.

43. (new) The method according to claim 42, wherein the biological molecule is galactosyl α-1,3-galactose, a myeloma immunoglobulin epitope, or a hepatitis B surface antigen.

44. (new) A method for detecting the presence of a bacterium, virus, or parasite in a subject, comprising the steps of:

(a) administering to the subject the immunoglobulin according to claim 18 or 19 that specifically binds said bacterium, virus, or parasite; and

(b) detecting binding of the immunoglobulin or fragment.

45. (new) The method according to claim 37, wherein the virus is HIV or hepatitis B virus.

46. (new) A method for detecting the presence of a tumor in subject, comprising the steps of (a) administering to the subject the immunoglobulin according to claim 18 or 19 that specifically binds a protein present on said tumor, and (b) detecting binding of the immunoglobulin or fragment.

47. (new) A method for detecting the presence of myeloma in a subject, comprising the steps of:

(a) administering to the subject the immunoglobulin according to claim 18 or 19 that specifically binds a myeloma immunoglobulin epitope; and

(b) detecting binding of the immunoglobulin or fragment.

48. (new) A method for detecting a biological molecule in a subject, comprising the steps of:

(a) administering to the subject the immunoglobulin according to claim 18 or 19 that specifically binds said biological molecule; and

(b) detecting binding of the immunoglobulin or fragment.

49. (new) The method according to claim 41, wherein said biological molecule is a protein, viral envelope glycoprotein, hapten, carbohydrate, nucleic acid, cellulare receptor, or a membrane protein.

50. (new) The method according to claim 42, wherein the biological molecule is galactosyl α-1,3-galactose, a myeloma immunoglobulin epitope, or a hepatitis B surface antigen.

51. (new) A composition comprising an immunoglobulin or a fragment thereof that specifically binds to an antigen of interest, wherein said immunoglobulin comprises a variable region of a heavy polypeptide chain, said variable region being devoid of normal light chain interaction sites.

52. (new) A composition comprising an immunoglobulin or a fragment thereof that specifically binds to an antigen of interest, wherein said immunoglobulin comprises at least part of the variable region of a heavy polypeptide chain, said variable region

being devoid of normal light chain interaction sites and wherein the immunoglobulin is a heavy-chain immunoglobulin.

53. (new) The composition according to claim 51 or 52, wherein the immunoglobulin or fragment specifically binds a protein, hapten, carbohydrate or nucleic acid.

54. (new) The composition according to claim 51 or 52, wherein the immunoglobulin or fragment specifically binds a protein present on tumor cells.

55. (new) The composition according to claim 51 or 52, wherein the immunoglobulin or fragment thereof is combined with a toxin, enzyme, drug, hormone, or cytokine.

56. (new) The composition according to claim 54, wherein the toxin is mistletoe lectin toxin.

57. (new) The composition according to claim 51 or 52, wherein the immunoglobulin or fragment thereof is bifunctional or multifunctional.

58. (new) The composition according to claims 51 or 52, wherein the immunoglobulin or fragment thereof is heterospecific.

59. (new) The composition according to claim 58, wherein the immunoglobulin or fragment thereof is capable of targeting drugs, hormones or cytokines to cells.

60. (new) A method of treating cancer in a mammal, comprising the step of administering the composition according to claim 51 or 52, wherein the immunoglobulin or fragment thereof specifically binds to a tumor-specific protein.

61. (new) A method of inducing protection against a pathological agent in a mammal, comprising the step of administering the composition according to claim 51 or

52, wherein the immunoglobulin or fragment thereof specifically binds to the pathological agent.

62. (new) A method of regulating the expression or the activity of a protein in a mammal, comprising the step of administering the composition according to claim 51 or 52, wherein the immunoglobulin or fragment thereof binds to said protein.

63. (new) A method of modifying the metaboloism of a cell comprising the step of administering an immunoglobulin or a fragment thereof according to claim 18 or 19.